(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property **Organization**

International Bureau



(43) International Publication Date 5 February 2004 (05.02.2004)

PCT

(10) International Publication Number WO 2004/011996 A1

(51) International Patent Classification7:

G02F 1/133

(21) International Application Number:

PCT/KR2003/000512

(22) International Filing Date: 17 March 2003 (17.03.2003)

(25) Filing Language:

Korean

(26) Publication Language:

English

(30) Priority Data: 10-2002-0044157

26 July 2002 (26.07.2002) KR

(71) Applicant (for all designated States except US): SAM-SUNG ELECTRONICS CO., LTD. [KR/KR]; 416, Maetan-dong, Paldal-ku, Suwon-city, Kyungki-do 442-370 (KR).

(72) Inventor; and

(75) Inventor/Applicant (for US only): MOH, Sang-Moon [KR/KR]; 106-701 Byeosan Apt., Mangpo-dong, Paldal-ku, Suwon-city, Kyungki-do 442-707 (KR).

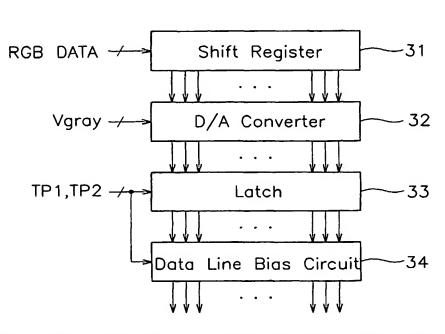
- (74) Agent: YOU ME PATENT & LAW FIRM; 825-33 Teheran Bldg., Yoksam-dong, Kangnam-ku, Seoul 135-080 (KR).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

with international search report

[Continued on next page]

(54) Title: LIQUID CRYSTAL DISPLAY



The present (57) Abstract: invention relates to a liquid crystal display with multi-line inversion which reverses polarity of applied voltages every two or more rows for preventing the deterioration of liquid crystal. An LCD according to the present invention includes a LC panel in matrix arrangement, a timing controller performing data format of image data from an external graphics source, a voltage generator generating voltages for driving the LC panel, a gate driver sequentially scanning gate lines of the LC panel by unit of one horizontal scanning period, and a data driver outputting analog gray voltages selected based on the image data to the data lines of the LC panel. The data driver includes a data line bias circuit biasing the data lines to an intermediate level voltage whenever displaying the

pixels in one row. Accordingly, the amount of stored charges between the pixels in the rows with polarity inversion and the pixels in the rows without polarity inversion is reduced, and consequently, the luminance difference between the pixels in the rows with the polarity inversion. In addition, the present invention elongates the application duration of the data signals for pixels in the rows with the polarity inversion compared with the application duration of the data signals for the pixels in the rows with the polarity inversion compared with the application duration of the data signals for the pixels in the rows without the polarity inversion such that the difference in the charge storage between the two rows is reduced.

